ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture
University of Illinois, Urbana-Champaign and Illinois State Natural
History Survey Urbana, Illinois

No. 1--March 28-April 3, 1971

In writing the Spray Service Report for fruit crops in Illinois, reference is made to two circulars the fruit grower needs to have: Circular 1014 (Illinois Fruit Calendar) and Circular 1004 (Pest Control and Related Orchard Practices in Commercial Fruit Plantings). These are available free of charge from the Office of Agricultural Publications, 123 Mumford Hall, Urbana, Illinois 61801.

Keep nursery stock in cold storage until it is ready to plant. It will stay dormant and in good condition. Young trees should not be planted in the mud. If the soil is wet, wait until it works easily--even if you need to wait until May or early June to plant trees. When planting young trees, do not bend the roots to fit into the holes. Shorten the roots instead. Watch newly planted trees for signs of rabbit damage and use guards if necessary.

For best results, apply nitrogen fertilizers on fruit trees three to four weeks before bloom. This gives the tree time to take up the nitrogen before the period of fruit set and growth (Circular 1004, pages 29 and 30). Peaches may be receiving too much nitrogen, according to the 1970 peach leaf analyses. High nitrogen levels reduce the quality and appearance of the fruit.

The Loring peach does better when pruning is delayed until the fruit buds are in the balloon stage.

The continued use of Superior oil is suggested for red mite and scale control. Oil is most effective at the tight cluster stage (see Circular 1004). When powdery mildew on apple is a problem, the oil should be applied earlier. Many growers apply oil-Cyprex at the green-tip then start mildewicides. Where scale insects are present, the addition of a phosphate insecticide to the oil is suggested for apples and peaches. Oil sprays can be applied in low volume. Straight oil in low volume has been successful, but rains within 24 hours after application have activated the emulsifiers thus washing-off the oil and reducing its effectiveness. For aphid control, when a phosphate has not been applied during the dormant stage, use a systemic phosphate from the half-inch green to early pink times. Try to get it on before

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the tight cluster to avoid killing mite predators. Growers using *Fallacis* mite predators should not apply a miticide before bloom. This will avoid destroying the mites that the predators need in order to survive.

Peaches in Areas A and B may be too far along for dormant spraying this week. Try to apply a spray for peach leaf curl if it is not too late.

Benlate has been approved for use this year on apples, peaches, and grapes. It is an excellent new fungicide that is good primarily on scab, powdery mildew on apples, and brown rot on peaches. It will not control cedar apple and quince rust or peach leaf curl. Benlate will also control the summer apple diseases. We will be telling you more about this as the season progresses.

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No. 2--April 4-10, 1971

Peach buds on most varieties appear to have survived the winter in good condition. Bloom and fruit set probably will be heavy thus requiring heavy thinning.

A pink spray on peaches is needed for catfacing insects. We have no good control for tarnished plant bug, but either Gothion or Imidon at least two days before bloom will give some control and will be relatively safe for the bees.

Peaches probably will bloom this week in Area A. Our suggestion for chemical thinning is NPA, but this material may not be available. See page 32 of Circular 1004 for peach-thinning suggestions.

Sprays at early and full bloom on peaches are very important in controlling brown rot, especially if rain or heavy dews occur. Use sulfur and dichlone as suggested on page 23 of Circular 1004.

Dodine (Cyprex) is still our most-effective material against scab. The possible exception is the new material, Benlate. For prebloom sprays, use dodine at 1/2 pound per 100 gallons.

Where mildew is a problem, apply oil by the green tip stage if it is to be used. Then use sulfur or Dikar in the sprays after that. Sulfur and Dikar are not compatible with oil.

A systemic phosphate should be used in Area A for aphid control. It will be effective against aphids and will be safer on predatory mites.

Red-banded leaf roller moths are emerging in Area A and C. They will be laying eggs this week in Area A.

A new mite control chemical has received label approval. It is a new type of chemical, a formamidine. This is effective against all stages of mites and some caterpillar eggs, such as codling moth. It is moderately long-lasting and will give a high rate

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of kill with complete coverage. It is available both as an emulsifiable concentrate, at 4 pounds per gallon, and as a soluble powder. Some comparisons have shown the soluble powder to be more effective. It is water-soluble and does not leave visible residue on the fruit.

Two companies manufacture this new chemical. CIBA calls theirs Galacron. Nor-Am uses the name Fundal.

Follow the label for dosage and harvest restrictions. The oral (internal) hazard is moderate, the dermal (skin) hazard is low. A formamidine can be used any time during the season on European red mite or spotted mites. It does not harm several of the insect predators of mites but will wipe out the main mite predator (fallacies) of mites.

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No. 3--April 11-17, 1971

It has been called to our attention that several of those who subscribe to this report are home fruit growers. This report is for commercial growers. Many of the chemicals suggested for commercial orchards are considered to be too hazardous for use in a home garden. Such chemicals would include Guthion, Trithion, Thiodan, Ethion, parathion, TEPP, Systox, Dimethoate, Phosdrin, and Phosphamidon. Home gardeners should use the spray schedules given in Circular 1001, *Home Orchard Pest Control*.

INSECTS

Because cold weather has delayed growth, growers should be prepared to move fast in Areas A and B if warm weather suddenly reverses the trend.

On peaches, the pink spray should be applied about two days before the blooms open if a phosphate insecticide is used. This will insure maximum safety for the honey bees.

On apples, the systemic phosphate insecticide for aphids should be applied in tight cluster before much pink is showing to avoid the possibility of killing mite predators. Apple growers should watch for various kinds of caterpillars that show up before bloom, such as cankerworms, fruit-tree leaf rollers, tent caterpillars, and cutworms. These are usually easy to control, but they may cause fruit damage before the calyx spray becomes effective if no insecticide is used before bloom. During the past several years, some orchards have found climbing cutworms. They feed on the buds at night and return to their ground cover during the day. If cutworm damage is detected during bloom, spray the ground cover with diazinon. Cutworms usually show up in limited areas.

DISEASES

Apple powdery mildew is fast becoming a serious problem in southwestern Illinois. Anything we can do or learn may help combat this. Powdery mildew is definitely a springtime disease, for two reasons: First, young leaves are much more susceptible than mature ones. Second, powdery mildew infections are reduced as the temperatures increase. In other words, the cooler springtime temperatures of 70 to 75° F. are more desirable for the fungus than mid-summer temperatures

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of above 90° F. Thorough spray coverage, particularly in the early sprays, is a must for powdery mildew control.

Wettable sulfur, 6 to 8 pounds, is the ideal fungicide for powdery mildew, but Dikar appears to be the best overall fungicide. Dikar will control all of the diseases that damage apples, such as scab, rusts, and powdery mildew. Benlate rates about third for controlling powdery mildew, although it rates first for scab.

You may want to mix materials to get a two- or three-way effect. Most of the recommended fungicides are compatible with each other, such as Cyprex, captan, wettable sulfur, Dikar, and Polyram. These may be mixed and used interchangeably.

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No. 4--April 18-24, 1971

Orchards in Areas A and B should be full of blooms or close to it this week. Apples will approach petal-fall. Peaches will be in petal-fall and may possibly start the shuck-split. Growers should check the fruit calendar (Illinois Circular 1014) since it is extremely close to actual orchard development. The calendar mentions the many factors that a grower must be aware of as the season unfolds. For example, this week in Areas A and B, the calendar points out that (1) European red mite adults are beginning to lay eggs, (2) spotted mites are dispersed over the tree now, and (3) red-banded leaf roller eggs are mostly hatched. Reading on into the next week, note 12 warns us to look for rosy aphid leaf-curl damage. The Illinois Fruit Calendar is quite useful in following the sequence of orchard events.

The calendar does not mention any unusual development. This year, for example, Chris Doll has had many calls from home orchardists as well as commercial growers concerning the Eastern tent caterpillar. Its egg masses are on limbs and should be hatched by now in Area B. Any insecticide will eliminate these pests; but if something is not used, they will destroy the leaves.

Aphids are abundant in Area C where a dormant spray was not used. A systemic organic phosphate is suggested under seed conditions.

Curculio has been present for the past several years, but well-controlled. Unless special circumstances exist, an insecticide may not be required on apple in the pink. Special circumstances would include (1) any caterpillars present, as discussed last week; (2) no previous aphid control applied; or (3) where wild plum, hawthorns, or other wild fruit are near the orchard. Curculio damage will often be heavy near such a source of infestation, and an insecticide should be applied to nearby trees in the pink spray.

If flower-thrip damage has occurred regularly, an insecticide may help reduce the damage. Presently, we can only suggest a phosphate at least two days before bloom. The main problem here is that the flower thrip will be in exactly the same place at the same time as honey bees.

Growers in Area A who have had trouble with red-banded leaf rollers should search the smooth bark of the trees for egg masses in areas where trouble occurred last year. If you find one mass per tree or more, use Guthion in the petal fall spray.

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BRING IN BEES FOR POLLINATION

Growers in Areas C and D are cautioned about bringing in bees before the fruit-tree blossoms are open. Dandelions, for example, start blooming before apple trees. The bees may start visiting dandelions and completely ignore the fruit blossoms as they open.

GRASS AND WEED CONTROL

In some orchards where residual herbicides such as Simazine have been used for several years, climbing weeds have become a serious problem. There is no easy solution. One possibility is to quit using herbicides and return to mowing under the trees.

Another would be to stop using residual herbicides and using paraquat for chemical mowing. A few growers tried this last year with good results. Paraquat burns the aboveground parts of plants, but does not kill the roots. These growers sprayed a band under the trees. Two or three sprays during the season were required.

With both systems, the trees must be pruned and fruit-thinned so that under-the-tree operations are possible.

THINNING SUMMER APPLES

Summer varieties of apples should be chemically thinned at petal-fall. Delaying the application of thinning sprays on these summer varieties until 10 to 14 days after petal-fall usually results in too much damage to the trees. Jonathon and McIntosh can also be thinned at petal-fall if desired. (See pages 30 and 31 of Circular 1004.)

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No. 5--April 25-May 1, 1971

Warm weather continues to prevail and fruit trees are responding accordingly. Area B received a much-needed rain April 20, but the rest of Illinois is suffering from a drouth. Weathermen consider we are short about 9 inches of rain at this time in Urbana.

The southern half of Illinois (areas A, B, and a portion of C) will be applying the calyx spray to apples this week. From Urbana to Nauvoo, apples should be approaching bloom or in bloom. Normally we could expect some cool weather now for about a week or two which would curb development. If it doesn't come, we will be about 5 to 10 days ahead of normal.

Green apple aphid is most abundant in many orchards in area B. A systemic phosphate such as phosphamidon would be most effective.

The dry weather has been ideal for powdery mildew on apple. Since scab and rust are not likely to be bad with the continuing dry weather, it might be good to use wettable sulfur, 6 pounds per 100 gallons on your Jonathans. Powdery mildew has been found in orchards from St. Clair County to Adams County. It appears to be a serious problem. Some has been found in Lodi.

One comment on the apple bloom. Most orchards have close to snowball bloom, but others are showing a scattered or sparse bloom on Delicious and Golden Delicious.

PEACH GROWERS ARE WORRIED ABOUT THINNING

Most will be experimenting with chemical thinning, the "Kentucky-bumper," and other aids such as a mechanical limb-shaker. We know peaches will need thinning, but no one knows for sure how to do it most effectively and economically.

Peaches will be in shuck-split this week. Sulfur sprays or dusts are suggested for scab control.

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No. 6--May 2-7, 1971

The hoped-for cool weather arrived and has definitely slowed down the development of fruit crops. By May 2, we can expect first-cover on apples in Areas A and B. Some varieties may be more advanced. Area C will be mostly in the full-bloom stage, with more-advanced development in Pike and Adams Counties than at Urbana. Area D is showing some pink buds, but plant development is slow.

Peaches should be showing shuck-fall at Carbondale, shuck-split in Centralia, and petal-fall in Area C.

Strawberries range from past full-bloom at Carbondale, full-bloom in Centralia, to possibly some early bloom in Area C. No bloom is expected this week in Area D. Of course, generalizations are difficult since there are both early and late varieties. As should have been mentioned last week, the strawberry leaf rollers are more common than usual, and should be controlled where they are prevalent.

It is still generally dry throughout Illinois. Except for powdery mildew, most diseases are at a minimal stage of development. Some secondary spread was noted in one orchard in Calhoun, but Chris Doll thinks that sprays have definitely helped. We have a lot of tests in Illinois this year. Some growers are using full-strength, wettable sulfur; some, Dikar; and some, both.

Apparently, some fruit tree leaf rollers were found in Calhoun County.

CHEMICAL THINNING OF APPLES

Apples in Area A may be nearing the stage for chemical thinning this week. See pages 30, 31, and 32 of Circular 1004.

For thinning Rome, Jonathan, McIntosh, Red Delicious, Turley, and Grimes, the combination of NAA plus Tween 20, applied when the largest fruits are 11 to 13 millimeters (mm) in diameter and most of the other fruits are 9 to 11 mm in diameter, has given good results. The various spur-type sports of Red Delicious can be considered the same as non-spurs for chemical thinning.

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Some growers report good results from thinning Red Delicious with carbaryl (Sevin), applied 15 to 20 days after full bloom.

The Golden Delicious variety is more difficult to thin, especially in a heavy bloom year. On heavily set Goldens, we suggest applying the NAA-Tween 20 combination when the largest apples are 10 to 11 mm in diameter and most of the other apples are 8 to 9 mm in diameter. The smaller apples are more susceptible to NAA thinning action.

If you do not have a template for measuring fruit diameter you can make one by drilling holes in a sheet of metal or plastic. Following is a conversion table from fractions of an inch to millimeters. Measuring with a template is easier, faster, and more accurate than measuring with a ruler.

Equivalent measurements

Inch	mm	Inch	mm
9/32	7.1	13/32	10.3
5/16	7.9	7/16	11.1
11/32	8.7	15/32	11.9
3/8	9.5	1/2	12.7
25/64	9.9	9/16	14.3

DEFRUITING YOUNG APPLE TREES

No fruit should be allowed on young apple trees until the tree is large enough to bear sufficient fruit to make spraying profitable. Fruit production reduces growth. The New York Station says every 2 pound unit of fruit on a young tree reduces total shoot growth by 3 feet.

A lot of fruit on young trees can be removed by spraying them with 2 pounds of carbaryl (Sevin) per 100 gallons of water shortly after petal-fall. The remaining fruit should be removed by hand.

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No. 7--May 9-15, 1971

Small showers have occurred in the southwestern areas, but the drought still exists over the central one-third of Illinois. You should read the report on Botryosphaeria that was published in the Transactions of the Illinois Horticulture Society, Volume 88: pages 26-29, 1954. Some of you may remember the damage caused by this disease. It is significant that the fungus attacks trees that are under water stress and that in 1954 it was found widespread throughout Illinois. A good rain will alleviate this potentially serious problem. Irrigation will help, also. The weather situation was reversed in 1954. We had normal rainfall in the spring months and a very dry summer, which allowed Botryosphaeria to develop in the fall period.

SOME TREES ARE DYING

Reports of Starkrimson apple trees and peach trees dying in southwestern Illinois have us worried. Some growers have suggested a 10-percent loss of peach trees. This has not been thoroughly checked out as yet, but, hopefully, will be in another week.

Signs of what appears to be pine mice damage were noted in some western Illinois orchards. Trees were dying with typical mouse damage symptoms--except that no chewing of the bark was noted on the trunk even below ground. No collar rot or crown rot was present. But by investigating, numerous holes in the ground were found under the spread of the tree. If there was much vegetation or litter on the ground, the holes were not readily apparent.

Pine mice are more likely to feed on the bark of the roots than on the trunk. They frequently work 12 inches or more below the soil surface. They spend about 90 percent of their life underground, thus surface baiting is NOT effective in controlling them.

Meadow mice also may burrow underground at times, though they mainly live on the surface. Thus, the only sure method of identification is by trapping.

If pine mice are present, use a trail-baiting machine for control. This machine makes an artificial underground runway and places bait in it. This type of baiting is effective for both species of mice.

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INSECTS AND MITES

In general, European red mites are becoming quite plentiful in Area B. It is hoped that predators will keep them under control.

Growers in Areas B and C should watch for rosy aphids just after bloom. In bloom, the leaves start to curl and they are hard to see. Use phosphamidon, if necessary, to control the aphids.

When Sevin is used for thinning apples, try to avoid thorough coverage on the inside of the tree to avoid killing the mite predator Fallacis.

We continue to suggest the use of lead arsenate in the calyx spray but do not think the continued use of lead is necessary. In some areas, lead arsenate, 1/2 strength plus 1/2-strength organic phosphate has been recommended to protect against predator damage. However, it is now known that most mite predators have become resistant to organic phosphates. Thus, full-strength organic phosphates will not harm predators and accordingly lead arsenate is not needed.

LESSER PEACH TREE BORER

By this time, peach growers have pruned and have applied several sprays or dusts. Thus, they should be aware of the amount of borer damage. In Area A, borer spraying will start in four to six weeks, even though a few moths may have emerged. Thus, it might be necessary to clean and treat a few wounds by hand. This is especially important if severe infestations can be found at this time on scaffold limbs in certain areas of the orchard.

FIRE BLIGHT

It is most difficult to try to tell growers what to do about streptomycin sprays on Jonathan. All but Area D have passed the bloom. However, based on past experience, the recent (May 3) cold weather, 20° F. at Barrington, 34° F. at one orchard at Carbondale, and 32° F. at Urbana, would slow the fire blight organism down. Area D will probably have enough degree days to warrant streptomycin sprays by bloom time. Dry weather, however, should be the greatest deterrent to blight infections. Thus, if a prediction must be made, it is that blight should not be a problem unless rainy weather should suddenly prevail.

EFFECT OF COLD WEATHER

On the night of May 3, cold weather caused damage to strawberries in Area B. About one-half the blossoms were killed with temperatures as low as 29° F. Damage to peaches was also reported in one orchard. Strawberry growers are short of water, thus a short crop might be an advantage.

1971 PEACH SITUATION--SOUTHEASTERN STATES

A report from the Clemson Information Filter Center states "Practically every state in the southeast has had problems with frost

during the bloom period this season as the temperature dropped below freezing a number of times in March and April. Some damage has been reported in practically every area in the southeast but the total amount of damage may not be apparent for some time.

Intermittent hot and cold snaps accompanied by damp, windy conditions caused delayed and prolonged bloom periods in most areas. Quite probably these conditions caused some pollination problems. In addition, some leafing problems have been reported.

At present most areas appear to be from one to two weeks behind normal. The general feeling is that much of this time will be made up as growing conditions improve.

In general, the 1971 shipping potential for fresh market peaches appears good even though spotty damage has occurred in most areas. Assessment of all the factors which affect the total peach crop cannot be made at this early date."

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No. 8--May 16-22, 1971

TWILIGHT MEETING, THURSDAY, MAY 20

Sauer's Springdale Orchard is the location for the twilight meeting. The orchard is three miles south of Murphysboro and a half mile west of Illinois 127.

From five-thirty until seven, there will be a demonstration of the application of a fertilizer-herbicide solution. J. Tweedy and Chris Doll will discuss weed control, and John Sauer will discuss chemical thinning and other practices used in the orchard.

After free sandwiches and coffee at seven, Jack Hartley, Dan McGuire, Ron Meyer, and Dan Meador will discuss enabling legislation, mouse control, insect and disease control, and other orchard practices.

Apples are past the best stage for thinning in areas A and B. They should be in the thinning stage or approaching it in area C, and they are blooming in area D.

MITE CONTROL

Growers in Areas A and B should begin noticing mite populations on indicator trees, those places where they normally show up first. Look for damage on the small leaves that come out of the bud first. If your eyesight is fairly good, look up through the leaves toward the bright light. This will make it easier to spot mites and eggs, which are still mostly on the undersides of the leaves. European red mites have laid many eggs. This first generation is now in the egg through half-grown mite stages.

Populations of 50 to 60 per leaf in some leaf clusters were observed during the past week. That is too high to expect control by predators or even with a Dikar program. There are too many factors in predator management to give simple steps for success. However, the basic principles can be summarized. Watch the populations that become numerous enough to do what you consider will be excessive damage to your trees. Depend on your experience of the last several years to decide when they need suppression. Then apply a miticide that does not kill predator mites. You do not want to kill-out the plant-feeding mites. That would starve the developing predator populations. You only want to prevent excessive mite damage--not all evidence of mite feeding. Healthy trees can take widespread, visible evidence of feeding without affecting the crop. But watch the development of the mite populations closely. If additional suppression is needed, this means some unusual situation or a damaging pesticide has greatly reduced your natural population of fallacis mite predators. Continue to suppress the

plant-feeding mite populations until the predators maintain control. You must learn to judge the time when suppression is needed, since many orchard practices vary and will influence the way you operate. If you can see fallacis mite predators now and plant-feeding mites are moderate to low in number, you will not need to suppress the plant-feeding mites.

DISEASES

Powdery mildew is well established in most orchards in Area B. Secondary infection is widespread. One unsprayed block of Jonathans showed an infection of almost 95 percent of the new leaves. Full-strength wettable sulfur (6 pounds per 100 gallons) is providing excellent control. A wetting agent would improve the effectiveness of the fungicides used for powdery mildew, such as sulfur and Dikar. This does not mean, however, that a wetting agent will improve the effectiveness of fungicides against all diseases. A wetting agent may increase coverage, but it will also decrease the residual deposit. For scab and the rust diseases, it is important to maintain a high residue for good control.

Scattered fire-blight infections have been seen in Area B. Hail hit in much of Area A on May 7, and this could mean a fire-blight problem. No blight has been reported as yet in Area A.

The decline of Starkrimson is a puzzle to all of us. Thus far, two different orchards are showing dying trees. Some blocks are in a state of decline of 40 percent or more. In all cases, the trees are dying in the crown area. Most of these trees are on seedling rootstock and were planted about 1958. There will be more on this problem as the season progresses.

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No. 9--May 23-29, 1971

TWILIGHT ORCHARD MEETING MAY 25

Jerome Eilerman from Batchtown in Calhoun County will host a twilight orchard meeting on Tuesday, May 25, at 6:30 p.m. Chris Doll and Roscoe Randell will comment on orchard conditions. A branch shaker for thinning peaches will be demonstrated.

STAGES OF DEVELOPMENT

Apples and peaches in Areas A, B, and C are growing rapidly. In Area C, the apples are in or just past the best stage for chemical thinning. In Area D, they are between petal-fall and first-cover.

In Area A peaches should be starting to get loose and ready for mechanical thinning.

DISEASES

Fireblighted terminals are showing up in Areas A, B, and C. Small amounts of scab have been seen in Areas A and B. Powdery mildew is mostly light in Area A, but is moderate to severe in parts of Areas B and C. Mildew appears to be moving further north this year.

Dust storms have been reported in scattered areas. Dust particles in a strong wind act like a sand-blasting machine on the tender, young terminal growth. The tiny wounds on the young leaves and shoots make these parts especially susceptible to fireblight infection if wet weather occurs before the wounds can heal.

More reports are being received of Starkrimson trees on seedling roots dying. We are not able to determine the cause as yet, but we are wondering if the severe cold in January of 1970 may have caused injury that we could not see immediately. This could have caused the trunks of Golden Delicious trees to crack and split, but they would heal without serious tree loss. Starkrimson trunks did not split. Perhaps there was damage to Starkrimson that we did not see.

INSECTS AND MITES

Tent caterpillars feeding on young apple trees have been reported from several locations. Usually, the affected young trees are near wooded areas. The caterpillars crawl from the wooded areas to the apple trees. These pests are not a problem on regularly sprayed trees. Guthion, Imidan, and Sevin are effective against them. More

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than one spray may be needed on young, nonbearing trees. Caterpillars keep moving out of the woods for a period of time.

European red mites have increased enough in some orchards to warrant miticide applications.

BRINGING YOUNG APPLE TREES INTO BEARING

Some Red Delicious trees are slow to start bearing. The object is to slow down growth. Several practices to encourage bearing can be used. The first and easiest one is to quit applying nitrogen fertilizer until the trees bear. Alar at 2 pounds per 100 gallons (2,000 p.p.m.) can be applied from two to five weeks after bloom. Between three to six weeks after bloom, the trees can be scored. When doing so, make a clean cut without loosening the bark. If the bark is loosened, the wound will not heal properly. Another practice is to spread the branches. Usually a combination of practices is more successful than any one alone.

ALAR ON PEACHES

Last year, several growers tried Alar on peaches. Some growers were pleased with the results. Others could see little or no effect. Alar is supposed to cause peaches to ripen 3 to 7 days earlier and to do so more uniformly, so that fewer pickings are needed. Alar is most effective on vigorous, productive trees. Do not use Alar on old or weak trees.

Alar may be applied any time between style-abscission and pit-hardening. DO NOT APPLY ALAR LESS THAN 50 DAYS BEFORE THE NORMAL HARVEST DATE. Early applications usually require a larger concentration of Alar than those applied closer to the pit-hardening time. Our suggestion is to apply Alar when the peaches are getting loose and are ready for pole-thinning. When the fruit starts to tighten, it is too late.

Apply 4 to 6 pounds of Alar per acre for full-size trees. Use 1-1/3 to 2 pounds per 100 gallons of water. Apply 300 gallons per acre, diluted. On smaller trees, use the same concentration and spray until the trees drip. Use diluted sprays only. Concentrated sprays may cause damage to the leaves. Do not mix Alar with other spray materials.

We are still learning about Alar on peaches. Growers are urged to use Alar on a trial basis and only on part of their plantings.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 10--May 30-June 5, 1971

SUMMER ORCHARD FIELD DAY JUNE 8

Plan now to attend the Summer Orchard Field Day of the Illinois State Horticultural Society at Eckert's Orchards in Belleville on Tuesday, June 8.

Registration starts at 9:00 a.m. From 9:00 a.m. until 11:30 a.m. growers may visit exhibitors' booths and equipment displays, take informal trips through the sales stand, and watch equipment demonstrations.

After lunch and a short program, the afternoon will be devoted to tours. Some of the things to be visited are the packing shed, cider making facilities, CA storage rooms, DPA scald treatment facilities, pick-your-own strawberries in harvest, peach orchards, branch spreading in 3- and 6-year-old apple trees, herbicide plots, and semi-dwarf apple plantings.

MORE ABOUT ALAR ON PEACHES

To be effective on peaches, Alar must be thoroughly applied. Spray the tree with a dilute concentration until it drips.

One southern Illinois grower reports that last year trees sprayed with Alar at 2000 ppm ripened 7 days early, whereas trees of the same variety sprayed with 1000 ppm ripened 3 days early. The manufacturer recommends 1300 to 2000 ppm (1-1/3 to 2 lbs. per 100 gal.) applied as a dripping, dilute spray before pit hardening.

DISEASES

Quince rust has been seen on apple fruit in western Illinois. With recent rains it could, for the second year, be a problem in this area. The alternate host for this disease is the red cedar (*Juniperus* sp.) which is the same as for the cedar apple rust fungus. In quince rust, the "cedar gall" is a spindle-shaped enlargement on the stem in contrast to the definite "gall" of cedar-apple rust. An important point to remember is that the quince rust cedar infection is perennial and

may produce spores for several years. In contrast, the cedar apple rust gall is biennial (takes 2 years to develop and only forms spores once). Only the dithiocarbamate fungicides (ferbam, zineb, polyram, maneb, Niacide, etc.) will control it. Polyram is the only one formulated as a dust and there is no evidence that Polyram dust will work. It might be better than no spray, as happened during the extremely inclement weather in 1970.

Fire blight appears to be approaching with a vengeance at Urbana. The prolonged blooming period on Jonathan allowed pome of the late blossoms to develop fire blight. The cool temperatures have made it necessary to use the 100 ppm dosage.

Isolations from declining Starkrimson trees have shown the presence of Phytophthora, the collar rot fungus. We have always thought that Starkrimson would be resistant to collar rot, but apparently this is not the case.

INSECTS

Codling moth emergence was slow during recent cool weather. If cool rainy conditions persist, egg laying and hatching will be slow and extended. Warm weather will quickly bring the situation back to normal. Oriental fruit moths will be emerging for the second generation. Examine any damaged terminal to see if you have a threatening population. It is important to notice this occasionally in newly planted and young peach plantings so that populations do not get high enough to slow tree development.

San Jose Scale. Adult females are mature in Areas A and B and young crawlers will be appearing soon. If damage or scales were observed on fruit during harvest, the trees originating the fruit should be examined to see if live scales are present. Heavily infested areas will appear to have wood ashes scattered on those spots. Infested areas will be those spots most difficult to hit with spray materials. Areas where there are several branches or large branches with numerous stubs which have many water sprouts are likely spots to examine.

The adult females will be the largest and most plump scales. All small or flat scales will not have live insects under them now. Live scales will be dull shades of greys and browns and the insect under the scale is a lemon yellow blob with no legs, antennae, or eyes--only a few wrinkles. They give birth to young scales which are also pale yellow. The easiest way to check for live scale is to smash the largest, plumpest ones with the point of a pen knife and see if any yellow goo (haemolymph) comes out.

The organic phosphate insecticides are best for control now. It is questionable whether any one is better than another. The main problem is to get the insecticide on the scale. The whole reason there are any scale where you find them is that you have not been getting the insecticide on that spot.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 11--June 6-12, 1971

FIELD DAY AND TWILIGHT MEETING

Don't forget the Summer Orchard Field Day of the Illinois State Horticultural Society at Eckert's Orchard near Belleville on Tuesday, June 8, from 9:00 a.m. to 4:00 p.m. If you live in eastern Illinois you may also wish to attend the Twilight Orchard meeting of the Wabash Valley Fruit Growers at the Roy Newman Orchard near Martinsville on Thursday, June 10, at 6:30 p.m.

INSECTS

Control measures for lesser peach tree borers should be applied within one to three weeks. Make sure you will have adequate time between application and harvest of the early varieties for the insecticide you use--30 days for Thiodan, 21 for Guthion. Also, make sure the weeds are cleared so the trunk will be covered at ground level. Peach tree borers have gotten started where the ground-level area was neglected.

Growers in Areas C and D should review Report No. 8 for management suggestions concerning mite control.

ITEM OF INTEREST

The following was taken from a Canadian news letter:

"$5.45 AN EAR: Recently a grower purchased a set of special ear muffs. The protection against noise was so unbelievable that he says he will never spray without them again. Not only do they cut out the noise of the sprayer and most of the tractor but they allow one to hear the human voice normally.

This special ear protecting device can be obtained from M.S.A. Canada, 148 Norfinch Drive, Downsview, Ontario. Specify that you want MSA Ear Cup Kit, with attaching head band. They can be purchased with special attachments for hard protective hats. Cost $10.95."

DISEASES

The twig blight phase of fire blight is appearing in Areas A and B. Growers in Area C can expect an increase in blight this week. June is a crucial month for this disease. Streptomycin at weekly (seven-day) intervals is suggested throughout Illinois.

Some growers have indicated they were lessening their fire blight sprays because it has not appeared, but this is a

-more-

mistake. Continue protection at least through June. A grower found blight in one tree and then found the overwintering canker. He wisely pruned-out all infected wood immediately. Once fire blight starts showing all over the orchard, however, summer pruning really does not pay.

Powdery mildew continues to be persistent, and has recently been found in orchards in Union and Jackson counties. Mildew protection should continue through July in Illinois orchards.

CLIMBING WEEDS

These pests have become more serious in some orchards following several years of residual-type herbicide application. They can be controlled by repeated, timely sprays of 2,4-D. Spraying must be done when the weeds are young and before they start to climb the trees. Repeated spot sprays are a nuisance, but they are cheaper and easier than hoeing. Use the amine or acid form of 2,4-D at the rate of 2 pounds of active ingredient per 100 gallons of water. Add a surfactant.

PEACH THINNING

The question of when peaches are loose is hard to answer this year. In Areas A and B, the peaches should be loose now. But some varieties have not loosened much. The fruit appears to be growing more rapidly than normal. Perhaps this has prevented them from loosening.

Regardless of how loose they are, peaches in Areas A and B should be thinned now. The pits will harden very soon, and the fruit will then become even tighter.

SOUTH CAROLINA PEACH CROP MAY BE DOWN

The South Carolina Crop-Reporting Service has estimated the 1971 peach crop at 250 million pounds. This would be 7 percent less than the 1970 crop.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 12--June 13-19, 1971

Illinois fruit growers and families enjoyed an excellent Summer Field Day at Eckert's Orchard near Belleville. Appreciation should be extended to the Eckerts for their hospitality and to Chris Dall and Brian Knight for their efforts in arranging for interesting demonstrations and discussions about pruning, tree-spreading, and orchard herbicides.

PEACH THINNING

Peaches are now loose in Area C. Do the thinning as soon as possible. It is also time to apply Alar on peaches in that area.

The peach pits are starting to harden in Areas A and B, and the peaches are starting to tighten on the trees. Don't delay winding up the thinning operation.

BRANCH SPREADING

At the field day, many of you saw the branch spreading in young trees. Although we usually insert spreaders during the dormant season before pruning, spreaders could be inserted now.

If spreaders were inserted during the dormant season, they can now be removed from the branches that have a good crop of fruit. Leave the spreaders in until fall between those branches that do not have a good crop of fruit.

MITES

The recent hot weather at Urbana changed European red mites from a third grown to full-grown adults in three days. The young ones were difficult to see. But the adults became very obvious, and they moved quickly to the younger leaves. The mite predator fallacis will also respond to warm weather. So the management situation is not changed, things just move much faster.

The predator mite fallacis can complete a life cycle even faster than spotted mites, which complete theirs faster than red mites. The predators lay more eggs with abundant food and can eat more than a dozen young plant-feeding mites per day. This is why it is to a grower's advantage to allow the mite populations to develop close to the level where they will cause economic damage before suppressing them; also why they should only be suppressed, not wiped out. Accurate judgment about the point at which economic damage will occur

-more-

comes only with experience. The good judgment is worth the effort. Many orchards now require one miticide or even none at all, as the result of effective predator management.

DISEASES

Although dry weather exists throughout much of Illinois, fire blight can develop after the first rain. Trees sprayed once every seven days with Streptomycin will resist blight infections. If a seven-day schedule is not maintained, the trees will be susceptible. Protection against fire blight should be continued through July. With warm weather (above 65°F.), only 50 p.p.m. of Streptomycin is needed.

When applying Dikar for powdery mildew control, use 2 pounds per 100 gallons, plus Triton B1956 as recommended on the label. Remember, Dikar is a complete fungicide and will control all diseases. It is not necessary to add a second fungicide to a Dikar spray. Where Dikar has been used half strength with half strength of another fungicide, mildew is not being controlled. In other words, half-strength Dikar will not control powdery mildew.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 13--June 20-26, 1971

INSECTS

The first borer spray should be on peaches by now. Second-brood oriental fruit moth is beginning to cause die-back of tender growth this week in Area A.

Although no periodical cicada were expected this year, a few have been reported from Barry, Illinois.

Young grasshoppers are appearing in central and southern Illinois. Since populations in many areas were higher than usual last fall, it would be a good idea to check fencerows, ditch banks, and other grassy areas near young trees. Young hoppers are much easier to kill than mature ones, and they are often concentrated in relatively small areas, which makes control at this time economical. Grasshoppers can and do defoliate young trees in late summer after other sources of food are no longer available. Carbaryl (Sevin) 50W at 2 pounds per 100 gallons is suggested.

Apple aphids have become numerous in some orchards. We usually do not need to apply specific controls since predators and a fungus disease, which becomes active in warm, humid weather, control them. The main damage is terminal growth damage and honey-dew deposit on the fruit. With the widespread rains that have been occurring, natural control is likely in most areas.

In Areas C and D, apple maggot flies will be starting to emerge.

DISEASES

Bacterial spot is appearing on peaches in Area A where rain is most plentiful. Captan-Cyprex is the suggested program but nothing seems to do as well as we would like. Fortunately, many peach varieties are only about one month before harvest in the area, and extensive damage by bacterial spot is not expected.

Fire blight is developing rapidly in Area A, especially where streptomycin has not been used.

Where Bot rot (also called white rot or Botryosphaeria) might develop, growers should switch to phaltan. Some of the drier regions might be more concerned about this. It is still dry in the east-central portion of Illinois and in much of Area D.

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WASHINGTON APPLE PROSPECTS

Cal Bosch of the *Goodfruit Grower* says it is now apparent that the Washington apple crop will be lighter this year because of spotty bloom. It is much too early for an accurate estimate, but as of now the crop is pegged at 24,000 to 27,000 cars. This compares with 29,600 cars in 1970 and 37,300 cars in 1969.

LODI HARVEST

Lodi apples in Area A are growing rapidly due to good growing conditions, including plenty of moisture. Harvest is expected to start about June 25.

PEACH THINNING RESULTS USING NPA

We are still trying to learn about the use of NPA (Nip-A-Thin or Peach Thin 322) for thinning peaches. Results in the past have varied. Also there are several new varieties of peaches and nectarines that we need to learn how to thin. We would like to compile the results you growers had this year. We have prepared short data sheets for this purpose. We would like for each of you who used NPA to fill out data sheets and send them in. You will need one sheet for each variety and each age-block of trees treated. For example, if you treated a five-year-old block of Redhavens and also a 10-year-old block of Redhavens, you will need two data sheets. Use the following order blank for data sheets.

NAME_____

ADDRESS_____

_____

Number of sheets requested_____

Send request to: D.B. Meador
Horticulture Field Lab.
University of Illinois
Urbana, Illinois 61801

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 14--June 27-July 3, 1971

INSECTS

European red mites are generally increasing. Where Dikar has been used as the fungicide, a miticide may be needed now. If the mite population was fairly high, Dikar suppression will probably not be adequate.

Do not forget the peach borer treatments. In Areas A and B, it is about time for a second spray for the lesser borer and the first one for the regular peach tree borer.

DISEASES

The peach varieties that will mature near August 1 should not need any more sulfur for scab control. Continue captan for brown rot control as needed.

PROTECT THE STRUCTURE OF YOUNG TREES

Do not let a load of fruit bend young trees out of shape. If this happens, they usually will not return to their original shape. The central leader of dwarf and semi-dwarf apple trees is especially vulnerable to damage from overbearing. If the central leader is lost because of bending, it is very difficult to establish a new one.

ALAR ON APPLES

In Areas A and B, it is time to apply Alar on Jonathan and Red Delicious on blocks where you wish to use it. To minimize carry-over effects, apply Alar from 60 to 85 days before the normal harvest date. In Areas A and B, this period would be between June 25 and July 10 for Jonathan and Red Delicious. In Area D, McIntosh should also be sprayed with Alar during that time.

In addition to acting as a stop-drop hormone, Alar may delay maturity up to five days, increase the red color, reduce the fruit size slightly, and increase fruit firmness. You may wish to use Alar on selected blocks in order to spread-out the harvest period.

Apply Alar at the rate of 1 pound per 100 gallons of dilute spray (1000 p.p.m.) with thorough coverage. Make sure the inside and top of each tree is wetted.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture
University of Illinois, Urbana-Champaign and Illinois State Natural
History Survey Urbana, Illinois

No. 15--July 4-10, 1971

The Spray Service Report will be issued every other week from now on, since the 1971 spray season is about to end.

DISEASES

Dry weather continues to plague many growers. Powdery mildew is the most serious problem.

Fire blight appears to be waning. Streptomycin sprays should be discontinued unless rainy weather should become the dominant pattern.

Armillaria root rot is of concern to many growers. If possible, do not replant old orchard sites continuously. Experience has taught us that the fourth planting in the same area could have trouble. Only a few cases of Armillaria root rot have been positively identified in Illinois orchards. Thus, this problem is not common, but could grow as time goes by. New orchards should be planted in land that has been in agronomic crops for several years, if possible.

Do not spray when the temperatures are extremely hot. A good rule-of-thumb is not to spray if the temperature is above 85° F. Sprays are more likely to cause injury under such conditions.

INSECTS

We have been between broods with most of the major insect pests. If the hot weather continues, the next brood could develop somewhat early and could come on quickly. This means that in Areas A and B, the second broods of codling moth and plum curculio are starting this week.

For those apple growers who had San Jose scale problems, examinations should be made in infested areas to make sure control has been effective. (See Report No. 10.)

The hot weather allows mites to move very quickly. If predators have not yet achieved control, you will need to check development frequently. Growers in Area D should watch red mite development closely.

ILLINOIS PEACH AND NECTARINE HARVEST

The harvest of early peach and nectarine varieties has started in Area A, and is about to start in Area B. The volume from these early

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varieties is small. Volume harvest is expected to start between July 10 and 15, when the Redhaven season begins.

LIGHTER PEACH CROP IN THE SOUTHEAST

The June 25 report from the Clemson Filter Center states: "As of June 23, recorded movement of peaches during 1971 from the southeast has been approximately 50 percent less than for the same period in 1970. Though harvest dates are later than last year for most varieties, most of the reduction in shipments is due to a shorter crop in practically every state in the southeast."

ALAR ON APPLES

July 1 to 15 is the time to apply Alar on the Jonathan and Red Delicious varieties in Area C. (See Report No. 14 for more details.)

LEAF ANALYSIS

This is an effective way of managing the nutritional status of fruit trees. Like any testing program, however, the samples must be carefully taken and processed if they are to adequately represent the nutritional condition of the trees. The ideal time for taking samples is from July 1 to August 15. An individual sample should be of one variety only, from trees of about the same age, and from trees that are similar in vigor, appearance, and crop size.

Leaf-sampling kits may be obtained from the Pomology Division, Horticulture Field Laboratory, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801. Please request one kit for each leaf sample you wish to take. The kit contains instructions for taking, drying, and mailing the samples.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 15--July 18-July 24, 1971

MITES ON APPLES

During the past two weeks mite populations have increased rapidly in some apple orchards and leaf bronzing is noted. In other orchards predator mites or miticide sprays (or both) have kept the plant mite population checked. European red mites are the main problem but some two-spotted mites also are present.

Growers need to be especially alert in watching the mite population in their orchards now. Suppressant sprays may be needed until the predator mites build up enough population to give control.

MITES ON PEACHES

Serious infestations of European red mites were found on peaches in the Calhoun-Jersey County area. Up to 200 mites per leaf were found in some "hot spots." Leaf bronzing was starting.

Since mites are not usually a problem on peaches, fewer miticides have been cleared for peaches than for apples. And the harvest restrictions are more severe. The following table gives harvest restrictions on the products that have been cleared for peaches.

TEPP	3 days	
malathion	7 days	
Kelthane	14 days	
Omite	14 days	(changed from 28 days)
Tedion	30 days	
Chlorobenzilate	30 days	

Acaralate, morestan, morocide, fundal and galecron are NOT cleared on peaches.

For varieties about to ripen, malathion and TEPP are the only possibilities. TEPP is especially dangerous to handle, thus malathion is preferred when possible. These materials give a quick knockdown only. Where mite populations are heavy a regular miticide should be applied immediately after harvest.

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SOUTHEASTERN STATES PEACH HARVEST

The Clemson Filter Center reports that peach shipment from South Carolina and Georgia was unexpectedly heavy from June 28 to July 4, causing a considerable price drop. Georgia's volume is expected to decline now and South Carolina's volume to remain about steady.

ILLINOIS PEACH HARVEST

In the Union-Jackson County area light picking of Redhaven is starting. Volume harvest should start about July 19. Redhavens have not ripened as quickly as expected.

In the Calhoun-Jersey County area Earliglo, Sunhaven, and other early varieties are being picked. Redhaven harvest probably will start in about a week.

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Application for the

1971 95% CLEAN APPLE CLUB

sponsored by

THE ILLINOIS STATE HORTICULTURAL SOCIETY

in cooperation with

THE COOPERATIVE EXTENSION SERVICE

of the University of Illinois

Name_____ County_____

Address_____

_____

Description and location of block to be judged_____

_____

_____

A copy of the spray schedule must be provided. It may be attached to this application blank or it may be given to the judges at the time of inspection. Inspection will start about August 31 in the southern area and conclude about September 16 in the northern area.

Mail the application by August 15 to:

D. B. Meador
104 Hort Field Lab
University of Illinois
Urbana, Illinois 61801

ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 16--August 1-August 7, 1971

DISEASES

Recent heavy rainfall in certain parts of Illinois has brought attention to the fruit disease problem. Bitter rot in Southern Illinois, as well as sooty blotch, fly speck, and Botryosphaeoria (Bot rot) throughout the state could cause damage. Folpet (Phattan) is suggested as the best fungicide to use on apples for the remainder of the season, where disease potential is the greatest. Otherwise, fungicides such as captan, zinab, and polyram are adequate.

On peaches, captan and Botran are the preferred fungicides. Botran is specifically for Rhizopus rot. Captan is better for brown rot. The two materials may be used together in preharvest sprays. Either one may be used in the hydrocooling process as a postharvest treatment.

Now is the time to be aware of the harvest restrictions relating to all pesticides. Read the label carefully. If you have a question, check with your Extension Service county office.

INSECTS

In area D, a record hatch of brood codling moth eggs is starting. The emergence of apple maggots is continuing. The latter is usually heaviest during late June and early July, but emergence can continue through August and into September. A phosphate insecticide should be applied at 14-day intervals throughout this period.

The second generation of brood codling moths is diminishing in areas A and B, and is starting to decline in area C. By this time of year, however, there are usually enough stragglers to require some control measures. A phosphate insecticide applied at 14- to 20-day intervals should be sufficient.

MITES

Mites will continue to be a threat up to harvest time. In some orchards, the predators are effective in keeping the mites under control. But at this season of the year, the mite population can build up rapidly. Orchards need constant watching. Slight bronzing of interior leaves can be tolerated, but not bronzing of the entire tree.

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Our suggestions on miticides would be to continue with a specific miticide as long as it gives control in your orchard, meets harvest restrictions, and does not require more applications in one season than are allowed.

THE PEACH SITUATION

Cool, pleasant weather is delaying peach ripening. Most varieties were already 7 to 10 days later than normal, so they will be very late this year. But this may be a blessing in terms of marketing. From July 5 to 22, South Carolina unexpectedly shipped more than 600 CLE (car load equivalents) per week. With California's 400 CLE's per week, the markets filled with peaches. South Carolina's shipments for this week are estimated at about 450 CLE's, and should continue to decline.

The railroad strike in California makes shipments from there uncertain. If they cannot ship, they may try to store some of their peach crop, hoping for an end to the strike. Then, they might flood the market. In the meantime, the market should improve as South Carolina's volume declines.

APPLE CROP ESTIMATES

The International Apple Institute June "guesstimate" and the USDA July 1 estimate both predict an apple crop of about 147 million 42-pound equivalents. This is a million bushels less than the 1970 crop, and 13 million below 1969.

Most of the crop reduction is in Washington and the other Western States. The Eastern and Central States expect about the same to a slightly larger crop as in 1970. Our early market competitor, North Carolina, expects about the same size crop as in 1970.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 17--August 15-21, 1971

This is the last regular Spray Service Report for 1971. It may be necessary to issue a special one occasionally. We wish to thank the many growers and specialists who have contributed to the reports each week.

DISEASES

Excessive rains in some areas have contributed to a serious peach brown rot problem. Captan is still the most effective material to combat this disease. Botran is available for Rhizopus rot control. Where peaches are to be sold wholesale, it is particularly important that they be hydrocooled.

Otherwise, diseases are generally under control. On apples the standard fungicide programs are suggested. Actually, except in special cases, the orchard pest control programs will be close to terminating for the season.

Leaf yellowing and defoliation of Golden Delicious is prevalent throughout much of Illinois. This doesn't appear to be a serious matter but it is disturbing. Other varieties do not show this condition. All Golden Delicious, regardless of spray schedule, are similarly affected. It is thought that air pollution during air-inversion conditions is responsible for this injury. Apparently Golden Delicious is susceptible to this condition. It is well known that during air-inversion a warm air layer forms at 3,000 to 5,000 feet inhibiting the normal circulation of the atmosphere and allowing an accumulation of various air-pollutants to a level which is toxic to certain plants.

INSECTS

In Area A, the next two weeks are the time when codling moth occasionally slips in undetected and does considerable damage so check your most likely spots regularly. The same is true in Area D for apple maggot. Maggot moves in during late August and early September after we have stopped the spray program.

Peach growers should remember to get late borer sprays on varieties that have been harvested. Sprays for lesser borer that have been applied only during early season cannot be expected to give adequate control.

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MITES. In Areas A through C, orchards that have had successful predatory mite management have sufficient predators by now to handle mites the remainder of the season. In Area D mite suppression may still be required. Several reports have been received of unsuccessful control with predatory mites. Where Fundal or Galecron was used to control mites, growers should continue to watch mite development closely for the rest of the season. While excellent mite control has resulted from these miticides, predatory mites may be destroyed, leaving plant-feeding mites essentially free from suppression. Control may be good enough to last through harvest but diligent observation for both European red mite and spotted mites should be maintained.

SCALE INSECTS. Several orchards are having difficulty with San Jose scale. If you noticed scale-damaged fruit last fall, it might be wise to examine areas where they were found. Well-established populations are very difficult to eliminate now, primarily because they are hard to cover thoroughly with spray. The phosphate insecticides are effective but we do not know comparative efficiency. Diazinon seems to be preferred by some, but spray coverage is by far the most important factor. All stages of the insect can be found now, so timing is only important in the sense that fruit will need continuous protection until harvest if the main source of the scale population cannot be killed out.

STOP-DROP SPRAYS

NAA (napthalene acetic acid) and 2,4,5-TP (color-set, color-fix, etc.) are both cleared for use as stop-drop sprays on apples. 2,4,5-TP may be in short supply and may be difficult to find. Do not confuse 2,4,5-TP with the brush-killer, 2,4,5-T.

NAA takes effect in 2 to 4 days and is effective for about 7 to 10 days. Use 15 ppm for fall varieties (Jonathan, Delicious, Golden Delicious) and 20 ppm for winter varieties (Winesap and Rome). Do not make more than two applications. NAA should not hasten maturity.

2,4,5-TP takes effect in about 7 days and is effective for 14 to 28 days. It may speed up ripening if applied too early or if the weather is hot. Do not apply on summer varieties or on Grimes. Do not use more than one application of 10 ppm on Golden Delicious. Use 10 to 15 ppm on Jonathan and Red Delicious and 20 ppm on Winesap and Rome.

Some growers have had good results with a combination spray of NAA at 10 ppm plus 2,4,5-TP at 10 ppm.

With more of our apples going into storage the choice of stop-drop materials becomes more important. It is generally considered that 2,4,5-TP shortens the storage life of apples since it tends to speed up ripening. But the later the 2,4,5-TP is applied, the less will be the effect on ripening. NAA is preferred for storage apples.

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NAA is restricted to two applications. If they are applied 10 to 14 days apart, then the stop-drop effective period will be 15 to 20 days. Thus, it is very important not to apply NAA before it is needed.

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ILLINOIS SPRAY SERVICE REPORT

Prepared by Cooperative Extension Service College of Agriculture University of Illinois, Urbana-Champaign and Illinois State Natural History Survey Urbana, Illinois

No. 18--August 22-28, 1971

TWILIGHT MEETING TUESDAY AUGUST 24

A twilight orchard management meeting will be held at Ray Grammer's orchard Tuesday evening, August 24, at 7 p.m. This meeting will feature cold-storage construction and insulation.

Ray is constructing a steel cold-storage building insulated with urethane foam. The insulation is blown on. As far as we know, this is the first storage of this type constructed in Illinois.

Norman Ammermann of the Christiansen Foam Corp., Grand Rapids, Michigan, will discuss urethane insulation and will demonstrate the application. One advantage of blown-on urethane insulation is that it is gas-tight. Ray plans to eventually convert this new storage to CA.

Ray's orchard is about 7 miles southeast of Murphysboro. Go south from Murphysboro on Illinois 127 about 4 miles. Near the bottom of a long hill, the Echo Valley Orchard sign is on the east side of the road. Turn east on the side road at the sign and follow the road 2-1/2 miles to the Grammer packing shed.

APPLE MATURITY

One version of when apples are ready to pick is "When a buyer offers $5.00 cold cash per bushel, the apples are ready." Since we are in this business to make a living, it is hard and possibly foolish to turn down an early purchase offer. Unfortunately, these early pickings of immature, poorly colored apples frequently bring more money than those picked at the proper stage of maturity.

If we don't take advantage of the early market, growers in other states will. We can be sure that the supermarkets will be full of these immature, poor-quality apples during late August, the early part of September, and maybe during the later part of September too. Retail sales volume will be in proportion to apple quality.

Dr. Lott has suggested the following dates for starting apple harvest in an average season. Maturity will be about 10 days later and ripeness will be several days following maturity.

Area	Jonathan	Red Delicious	Golden Delicious
Union-Jackson Counties	Sept. 1	Sept. 6	Sept. 15
Centralia	Sept. 6	Sept. 11	Sept. 20
Jersey-Calhoun Counties	Sept. 8	Sept. 13	Sept. 22
Quincy	Sept. 14	Sept. 19	Sept. 25
Lake County	Sept. 24	Sept. 29	Oct. 4

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HARVESTING FOR STORAGE

Apple storage is becoming more important in Illinois apple marketing, both for the retailer who is keeping his sales stand open for a longer period and for the wholesaler who is also extending his sales season.

But the longer the storage period, the more critical storage conditions become. Last year quite a few apples came out of storage in poor condition. Scald was a particular problem.

Immature apples do not store well and are especially likely to scald. For best storage, apples should be mature but not ripe.

Usually the first apples of a variety to be picked do not store well. These first pickings should go to market rather than to storage. The last-picked apples of a variety also do not store well because they usually are too close to being ripe. They also should go to market.

The prime apples for storage are those that are harvested during the middle of the picking season for that variety. They are mature and are less likely to scald, yet are not ripe and have a good storage life left.

In determining maturity for storage, cut the apples and look at the flesh. The flesh color should have lost its greenish color and changed to white or pale yellow. It should not taste "starchy." It should be firm, snappy, and juicy without any grainy texture. Flesh starting to show graininess in texture is too ripe for storage.

The logistics of harvest make it almost impossible to harvest every apple at the best stage of maturity. However, careful programming will help. Special care should be given to the apples going into storage.

TREATING FOR SCALD

Apples picked at proper maturity and removed from storage by January 15 probably do not need any special treatment for scald. Immature apples and apples to be stored until after January 15 probably should be treated for scald as a safety factor.

Either DPA or ethoxyquin may be applied as a spray or a drench or by flooding before storage. Treat for a few seconds up to 30 seconds. Coverage and scald control tend to be better with fruit and solutions at room temperature than with cold fruit or cold solutions.

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